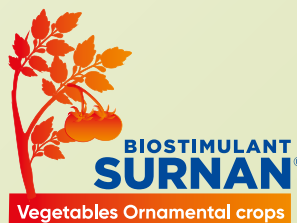
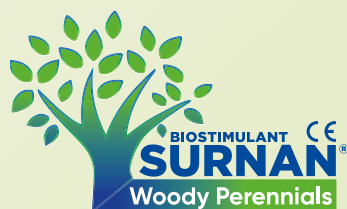


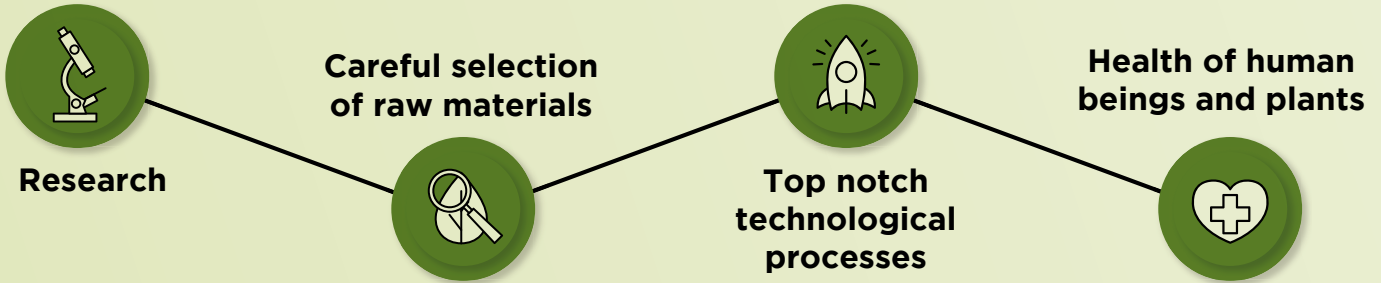


NON-MICROBIAL PLANT BIOSTIMULANT
FOR THE QUALITY OF THE CROPS:
COLOUR, SIZE, FIRMNESS AND TURGOR



TECHNOLOGY AND MILESTONES

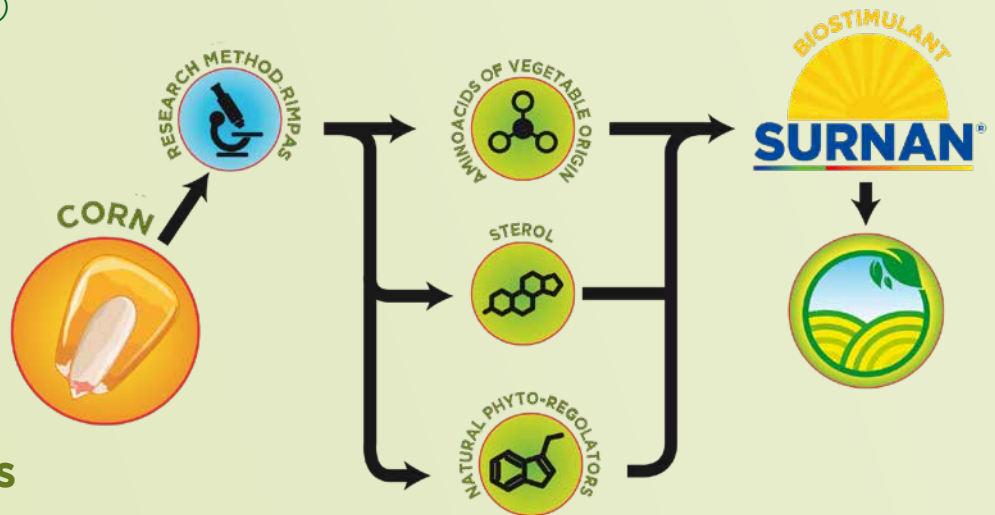
RIMPAS® Research and experimentation method



PROCESS BIOTECHNOLOGY

C.E.S.Hy.V.®

Controlled and
Selective
Enzymatic
Hydrolysis of
Vegetable Proteins



Characterization of hydrolysed corn gluten; University of Napoli Federico II

Project development of bacterial and/or fungal biofertilizers towards sustainable agriculture; University of Aquila.

Molecular responses of grapevine berry to the treatment with a plant-derived biostimulant (SURNAN®); Department of Biotechnology of University of Verona



2014

2018

2021

2023

2017

2020

2022



Development of production technology; University of Aquila.

Italian Patent N. 102019000000232 "Method of production of corn gluten hydrolyzed".



REACH REGISTRATION SUBSTANCE:
 Glutens corn, hydrolysed
 CAS number: 639814-42-9
 EC number: 954-297-5
 NUMBER:
 01-2120901907-52-00000



CE Biostimulants registration:
 EFCI Register - FPR 2019/1009
 - B-SURNAN-01/05/2023-01/05/2028-DE.1511
 EFCI Register - FPR 2019/1009
 - B-DORI-24/10/2023-24/10/2028-DE.2441



CE BIOSTIMULANT derived from corn gluten hydrolysate.

CLAIM: improvement of crop quality.

TARGET: colour, size, firmness and turgor of the fruits.

COMPONENTS: CMC 1 Virgin material substances and mixtures.

Glutens corn, hydrolysed (CAS n° 639814-42-9)

EXPERIMENTAL PROTOCOL

Treatment	Product name	Concentration	Dosage rate	Unit rate	Application
1	Untreated check				
2	Urea nitrogen	46 %	1,6	Kg/ha	A
3	Surnan®	2,5 %	25	Kg/ha	A
4	Surnan®	2,5 %	50	Kg/ha	A
5	Reference product				A



Replication: 4 (randomized block) - Application A: beginning of ripening.
Type of application: fertigation. - Irrigation system: drip irrigation.



Untreated check

Urea
1,6 Kg/ha



Surnan® 50 Kg/ha



Reference product

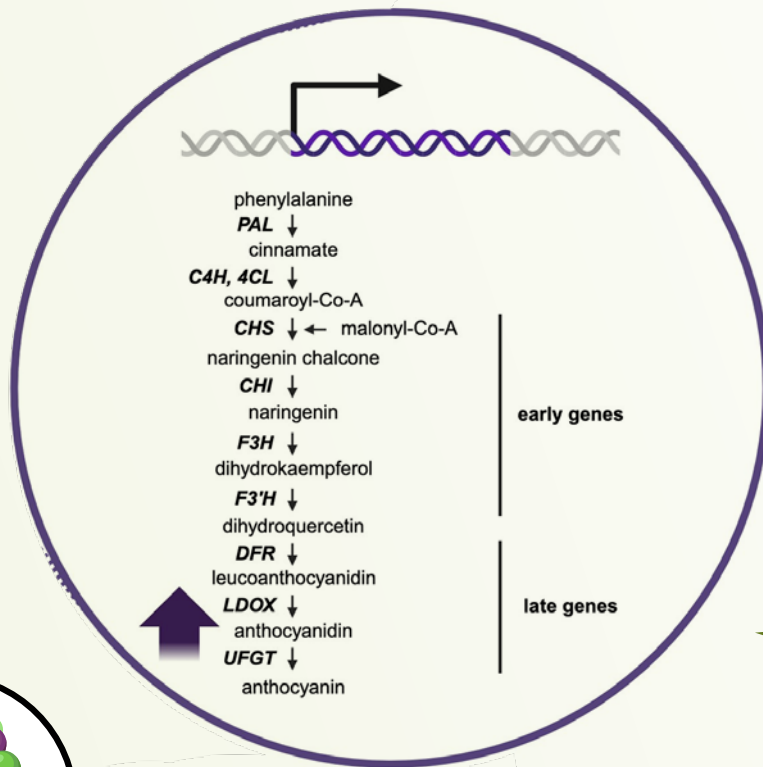


Surnan® 25 Kg/ha



EFFECTS OF THE SOIL APPLICATION OF A PLANT-DERIVED PROTEIN HYDROLYSATE ON BERRY COLOUR AND RIPENING OF TABLE GRAPES

14 days

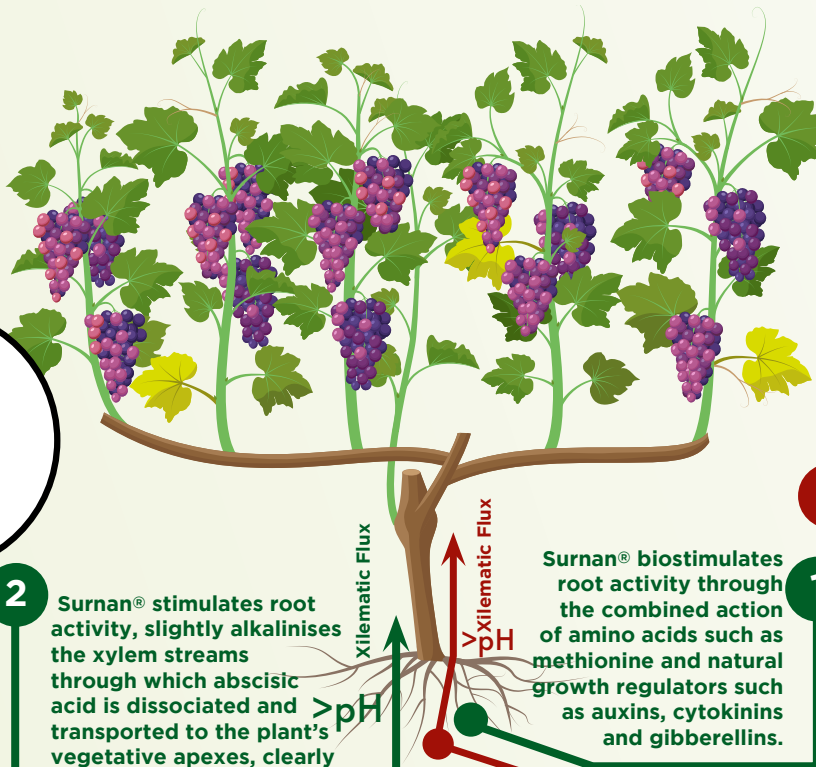


speed up of anthocyanin biosynthesis

Due to the presence of the AMINOACID phenylalanine, essential metabolites and colour precursors are produced and accumulated, in this case:

- Polyphenolic compounds
 - Flavonoids
 - Anthocyanins
- The NATURAL GROWTH PROMOTERS activate the oxidative processes of the phenolic compounds (flavonoids - anthocyanins) which lead to the accumulation of colour in the berries.

The increase in anthocyanins and flavonoids combined with the presence of the amino acids phenylalanine and methionine, and the acceleration of oxidative processes in particular the activity of the ACC oxidase enzyme (1-aminocyclopropane-1-carboxylic acid) leads to the formation of ethylene, a hormone necessary for the ripening and colour accumulation in the berries.



4

The abscisic acid pathway along the xylem stream reaches the pericarp where chlorophyll breakdown takes place.

3

2

Surnan® stimulates root activity, slightly alkalinises the xylem streams through which abscisic acid is dissociated and transported to the plant's vegetative apices, clearly leading to an increase in the pH of the plant's xylem streams

2

1

Surnan® biostimulates root activity through the combined action of amino acids such as methionine and natural growth regulators such as auxins, cytokinins and gibberellins.

1

- Abscisic acid pathway
- Ethylen pathway
- Activation of oxidation processes



SPAA[®]s.r.l.
Science in Natural Growth

Via delle Industrie 11-13 - Loc. Piano di Sacco
 65013 Città Sant'Angelo (PE)
 Tel./Fax. +39.085960209 - +39 3349978800
www.spaa.it - info@spaa.it



PRODUCT STRENGTHS



Raw Material from the plant for the life of all other plants.



Sustainable biostimulant.



Effective response to manufacturer's needs.



Guarantee of quality and healthiness for the consumer.



Ability to induce in the plant the synthesis of helictors for resistance to biotic and abiotic stresses.

Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM
ISO 14001

Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM
ISO 9001

Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM
ISO 45001

**Certified Quality, Environmental, Safety Management System:
ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018**

bioagricert INPUTS